July 27, 1965 J. F. WOLF 3,197,035

COLLAPSIBLE GARMENT RACK

Filed March 3, 1964 2 Sheets-Sheet 1

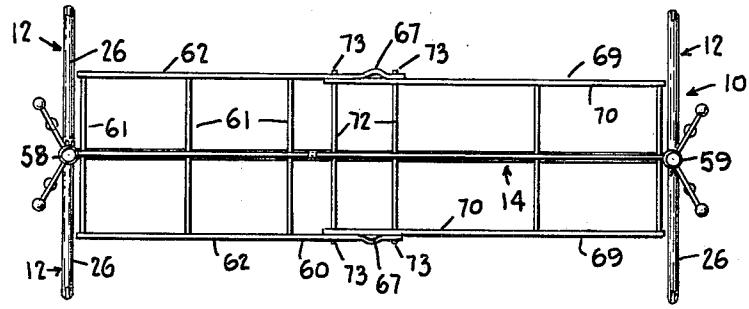


Fig. 3

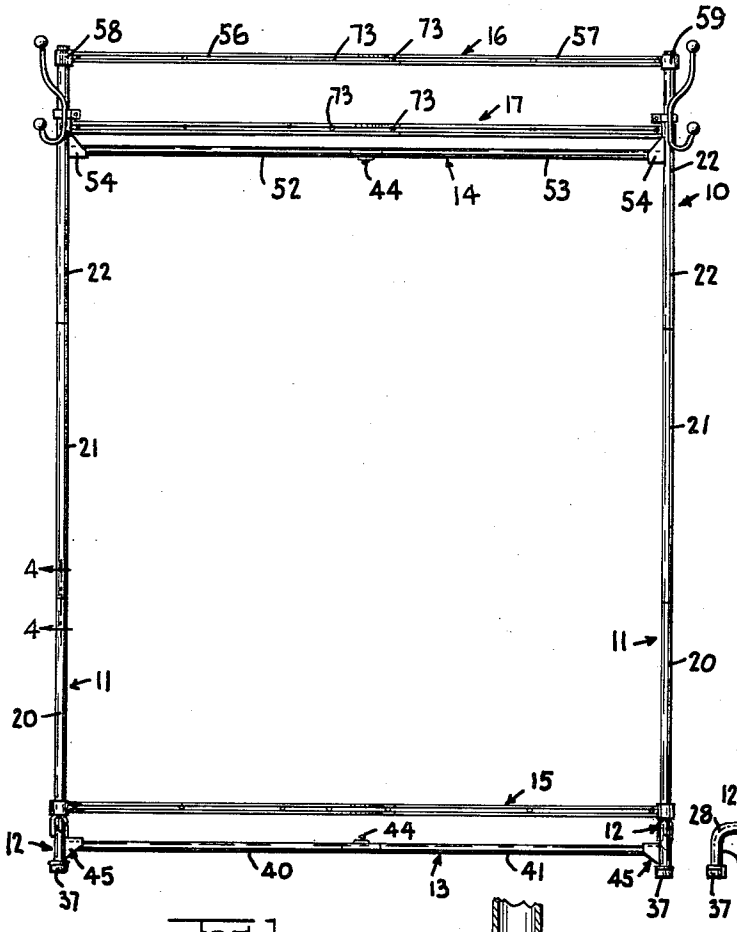


Fig. 1

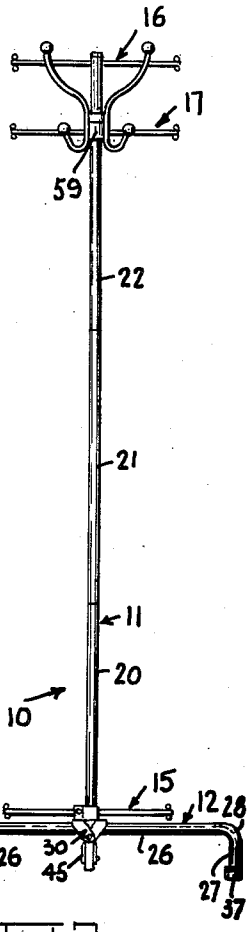


Fig. 2

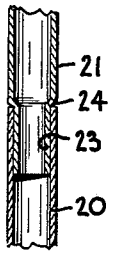


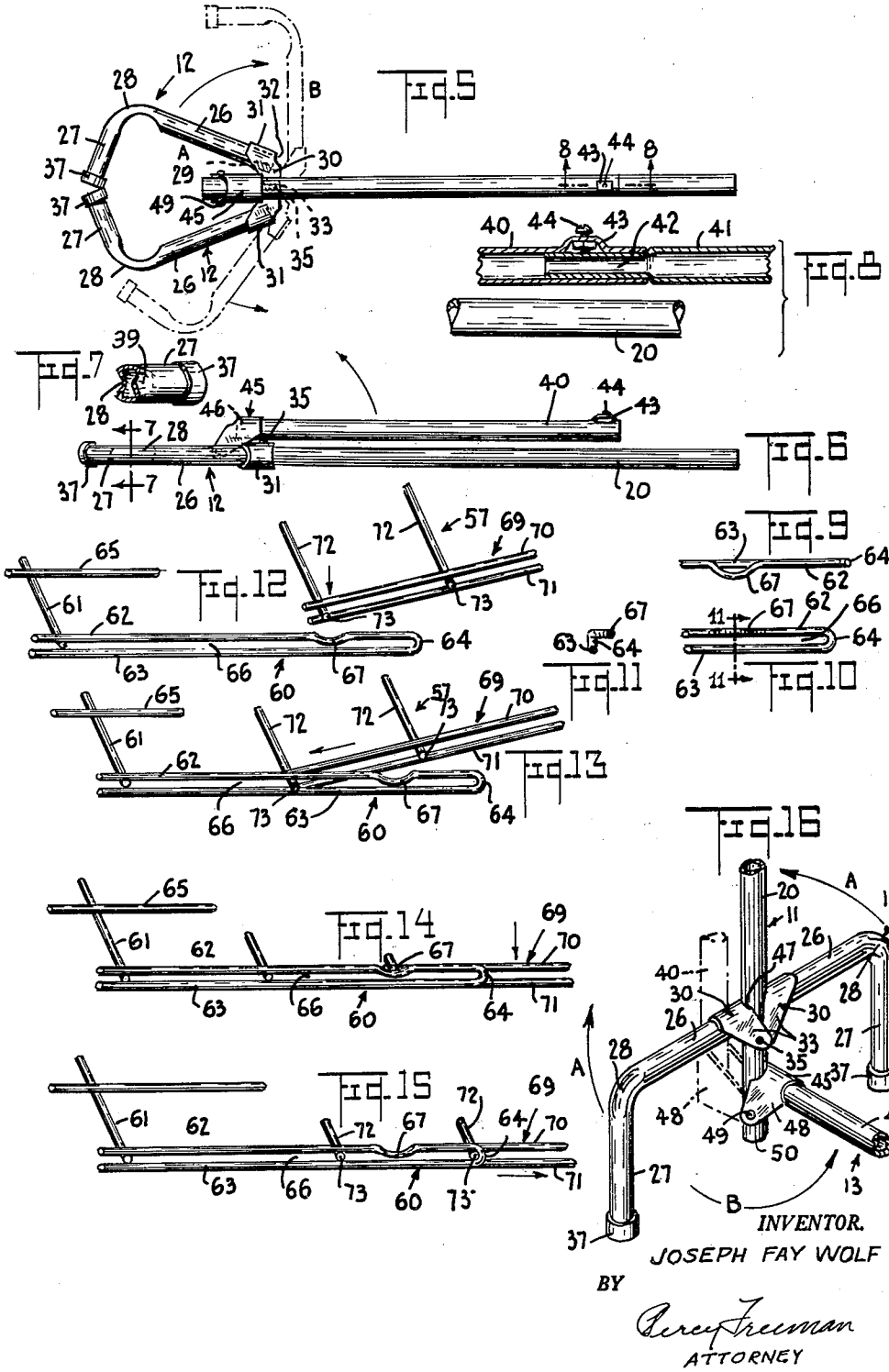
Fig. 4

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COLLAPSIBLE GARMENT RACK

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This invention relates generally to racks, and is especially concerned with a unique construction adapted for use as a clothes rack or the like.

It is an important object of the present invention to provide a rack construction of the type described, which may be stored and shipped in a knocked down condition occupying a minimum of space, and which can be quickly and easily set up or erected without the exercise of more than average skill.

It is a further object of the present invention to provide a rack of the type described wherein various parts thereof are sectional, with sections of different parts swingably connected to each other to facilitate the setting-up or erecting procedure and insure the durability and staunchness of the erected rack.

Another object of the present invention resides in the provision of a unique sectional-shelf construction which permits of rapid assembly without the use of tools, and is rugged and reliable in its erected condition.

It is still a further object of the present invention to provide a rack construction having the advantageous characteristics mentioned in the preceding paragraph which is capable of economic mass production for distribution and sale at a reasonable price, and which is adapted for utilization in many various designs and styles of neat and attractive appearance.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings, which form a material part of this disclosure.

The invention accordingly consists in the features of construction, combinations of elements, and arrangements of parts, which will be exemplified in the construction hereinafter described, and of which the scope will be indicated by the appended claims.

In the drawings:

FIGURE 1 is a front elevational view showing an erected rack constructed in accordance with the teachings of the present invention.

FIGURE 2 is a side elevational view of the erected rack of FIGURE 1.

FIGURE 3 is a top plan view of the rack of FIGURE 1.

FIGURE 4 is a fragmentary sectional view taken generally along the line 4—4 of FIGURE 1.

FIGURE 5 is a partial side view showing a standard or post of the instant rack in assembly with supporting legs which are in collapsed condition, the legs being shown in dot-and-dash outline in intermediate and erected positions.

FIGURE 6 is a partial view showing a pair of frame sections swingably connected together and illustrating in full lines the collapsed condition.

FIGURE 7 is a sectional view taken generally along the line 7—7 of FIGURE 6.

FIGURE 8 is a partial sectional view taken generally along the line 8—8 of FIGURE 5.

FIGURE 9 is a partial top plan view of one shelf section constructed in accordance with the teachings of the present invention.

FIGURE 10 is an elevational view of the shelf section of FIGURE 9.

FIGURE 11 is a sectional elevational view taken generally along the line 11—11 of FIGURE 10.

FIGURE 12 is a partial perspective view illustrating assembly of shelf sections in accordance with the teachings of the present invention.

FIGURE 13 is a partial perspective view showing a later step in the shelf assembly.

FIGURE 14 is a partial perspective view illustrating still a later step in the assembly of the shelf sections.

FIGURE 15 is a partial perspective view illustrating the fully assembly shelf sections.

FIGURE 16 is a partial perspective view of the erected rack, and indicating directions of collapsing movement.

Referring now more particularly to the drawings, and specifically to FIGURES 1–3 thereof, the assembled rack of the instant invention is therein generally designated 10. The rack 10 includes a pair of laterally spaced upstanding sides or standards 11, each having at its lower region a pair of support members or legs 12 engageable with a supporting surface or floor. Extending laterally between lower regions of the standards 11 is a bottom rail 13, and a top rail 14 extends laterally between upper regions of the standards. In addition, one or more generally horizontal shelves may extend between the standards 11, such as a lower shelf 15 extending between lower regions of the standards, an upper shelf 16 extending between upper regions of the standards, and an intermediate shelf 17 extending between upper regions of the standards and spaced below the upper shelf 16.

The standards 11 and crossrails 13 and 14 are advantageously of sectional construction, as are the shelves 15, 16 and 17. By this sectional construction the rack 10 may be quickly and easily disassembled so as to occupy a minimum of space for convenience and economy in storage and transit, and may be readily assembled with equal facility to assume its operative condition of use.

More specifically, the standards 11 may each be fabricated of a lower tubular member or section 20, intermediate tubular member or section 21 and an upper tubular member or section 22, which sections in assembly are inserted endwise one within the other, as best seen in FIG. 4. That is, one section, say section 21 may have a reduced end portion 23 defining an annular, outwardly facing shoulder 24, with the end portion insertable in the contiguous end of the adjacent section 20 to a limiting position with the shoulder 24 engaging the end edge of section 20. While it is not essential that fasteners be employed to secure together the members or sections of standards 11, gravity and friction suitably serving this purpose, fasteners may be utilized, if desired.

The pair of legs 12 at the lower region of each standard 11 may be defined by angulate tubular members each having an outstanding portion 26, and a depending portion 27 connected by a bend 28 to the outstanding portion. The outstanding leg portion 26 of each leg 12 has its inner end 29 remote from the bend 28 connected to the lower standard section 20 by a strap generally designated 30.

Each strap 30 may be fabricated of sheet material and doubled, folded or bent about the respective leg end portion 29 and fixedly secured thereto, by welding or other suitable means. The doubled or bent portion of each strap 30 is designated 31 and includes an abutment edge 32 extending beyond the adjacent end of leg portion 29. The strap 30 is thus wrapped substantially halfway about the leg portion 29 and extends laterally therefrom on opposite sides thereof, as by connecting portions 33. The connecting portions 33 are defined by opposite ends of the strap 30 and provide parallel spaced projections or ears extending both laterally beyond the leg portion 26 and longitudinally beyond the end portion 29 onto opposite sides of the adjacent section 20. Also, the legs 12 of each pair associated with one standard 11 are lo-

cated on the opposite sides of the standard with the connection portions or ears 33 of one strap 30 overlying the connection portions 33 of the other strap. In this condition, a pivot or pin 35 passes through each section 20 and the adjacent overlying connection portions 33.

The pairs of legs 12 are thus connected to respective lower standard sections 20 for swinging movement between the collapsed solid-line position of FIGURE 5 extending generally longitudinally of the standard and the positions shown in phantom, the upper position illustrating the use condition extending generally normal to the standard. FIGURE 16 also shows the erected position of legs 12.

The distal ends of leg portions 27 may be provided with feet 37, such as rubber or plastic caps for protective engagement with a supporting floor. The bend 28 may advantageously have its arcuate surfaces depressed or squeezed inward toward each other, as at 39 in FIGURE 7 for increased rigidity.

In the operative or use condition with the legs 12 outstanding from and generally normal to the standard 11, the strap edges 32 provide abutment portions in engagement with the standard to limit swinging of the legs. This is an extremely strong and simple structural arrangement as the bending force applied to the legs 12 by weight on the rack 10 is taken essentially by the straps 30, between the pivots 35 and abutment portions 32.

The lower rail 13 is comprised of a pair of tubular members or sections 40 and 41 arranged in end-to-end relation with interfitting ends as shown in FIGURE 8. Thus, one of the sections 41 may have its end portions 42 reduced for insertion into the other section 40; and, the receiving portion of the latter section may be formed with an upset portion 43 for receiving a transverse setscrew 44. The setscrew may be tightened for holding engagement with the received section end portion 42. The distal ends of sections 40 and 41 are swingably connected to respective lower standard sections 20, as seen in FIGURE 6.

More particularly, a strap 45, similar to the strap 30 connects the end of each section 40 and 41 to the lower region of the respective adjacent standard section 20. Each strap 45 is bent or wrapped substantially halfway about the end region 46 of section 40, being welded or otherwise fixed thereto, and having an edge 47 extending beyond the end of the section 40. Opposite ends of the strap 45 extend laterally and longitudinally beyond the end edge of end portion 46 to define a pair of parallel spaced facing connection portions or ears 48 extending across and on opposite sides of the frame section 20. A pivot or pin 49 passes through the frame section 20 and overlying connection portions 48 to pivotally connect together the sections 20 and 40.

It will be observed in FIGURE 16 that the pivotal connection 49 of strap 45 with frame section 20 is closely adjacent to the end 50 of the latter section. This proximity of strap 45 to the end 50 permits the strap and section 40 to swing about the axis of pivot 49 substantially 270° from its solid-line collapsed position on one side of and generally parallel to the section 20 to its phantom position on the other side of and generally normal to the section 20. The latter position is that of use wherein the abutment portion or edge 47 engages with the section 20 to limit further swinging movement of the section 40. The erected position of section 40 is shown FIG. 16.

Here again, the strap 45 between its pivotal connection 49 and edge 47 takes the major part of bending moment to substantially reduce the stress applied to the securement of strap 45 and section 40.

The upper rail 14 is composed of tubular sections 52 and 53 detachably secured together in end-to-end relation and having their distal ends swingably connected by straps 54 to the upper standard sections 22. The structural connection by straps 54 of sections 52 and 53 to respective frame members or sections 22 may be essentially similar to that described in connection with FIGURE 6, except that the straps 54 are not located adjacent to the ends of sections 22. Hence, the sections 52 and 53 are limited to substantially 90° of swinging movement relative to their connected sections 22, rather than the 270° of the lower rail sections 40 and 41.

The shelves 15, 16 and 17 may be substantially identical, so that only the upper shelf 16 need be described in detail. Shelf 16 includes a pair of shelf sections 56 and 57 each fabricated of open wirework construction and detachably secured together in end-to-end, generally coplanar relation. At distal ends of shelf sections 56 and 57 may be clamps 58 and 59, or other suitable securing means for detachable connection to the upper ends of sections 22.

The shelf section 56 includes a pair of side pieces 60 each fabricated of wire bent to an elongate generally U-shaped configuration and disposed in parallel spaced, facing planes. The sidepieces 60 are fixedly secured together by crosspieces 61 having their opposite ends fixedly secured, as by welding or the like, to respective sidepieces. As best seen in FIGURES 12–15, each U-shaped sidepiece 16 includes generally parallel spaced upper and lower wires 62 and 63 connected to each other at their inner ends by a bight or bend 64. The crosspieces 61 may have their ends extending between and fixedly secured to both the upper and lower wires 62 and 63 of the sidepieces 60; and, an additional longitudinal member or wire 65 may be secured to medial regions of the crosswires 61. Thus, it will now be appreciated that the spaces 66 between the upper and lower wires 62 and 63 of side members 60 define facing slots having their inner ends closed by bends 64.

Further, the upper wires 62 of the sidepieces 60 may each be formed with a laterally outwardly offset portion 67 located adjacent to and spaced from the respective bend 64.

The shelf section 57 may include longitudinal or sidepieces 69 extending in parallel spaced relation and spaced apart slightly less than the sidepieces 60 for engagement therebetween. If desired, each sidepiece 69 may include upper and lower wires 70 and 71, and a plurality of crosspieces 72 may extend between and be fixedly secured to the sidepieces. Certain of the crosspieces 72 may have their ends or terminal portions 73 projecting beyond the sidepieces 69, for a purpose appearing presently.

The assembly procedure of shelf 16 is shown in FIGURES 12–15, the shelf section 57 having its sidepieces 69 engaged between the sidepieces 60 of shelf section 56. This is enabled by entry of the projecting terminal portions 73 through the spaces defined by offset portions 67 for engagement of the terminal portions between the upper and lower wires 62 and 63 of sidepieces 60. In FIGURE 13 is shown an initial stage in the assembly wherein one of the terminal portions 73 has been engaged between wires 62 and 63, while FIGURE 14 shows a later condition wherein another terminal portion 73 is being engaged between the wires 62 and 63. The condition shown in FIGURE 15 is that wherein the terminal portions 73 are engaged between wires 62 and 63 and the shelf sections 56 and 57 are slid to an extended position with one terminal portion 73 engaging each bend 64. The offset portions 67 are thus located out of registry with any of the terminal portions 73 so that disassembly of the shelf sections may not occur inadvertently. Of course, the shelf sections may be disassembled by reversal of the above-described procedure.

From the foregoing, it is seen that the present invention provides a rack construction which fully accomplishes its intended objects and is well adapted to meet practical conditions of manufacture, distribution and use.

Although the present invention has been described in some detail by way of illustration and example for purposes of clarity of understanding, it is understood that certain changes and modifications may be made within

the spirit of the invention and scope of the appended claims.

What is claimed is:

1. A rack construction comprising a pair of spaced standards, a pair of legs connected to each standard and engageable with a supporting floor, a bottom rail extending between and connected to lower regions of said standards, and a shelf extending between and connected to upper regions of said standards, said shelf having a first section comprising a pair of U-shaped side members connected by cross-pieces, the U-shaped members each providing a slot, and a second section having parallel spaced members connected by cross-pieces with the ends thereof engageable in the slots, said shelf sections being of open wirework construction, said first section side members being parallel and having outwardly offset portions adapted to receive the ends of the cross-pieces of the second section, and said second section cross-piece ends extending beyond the sides of the section and engaged in the slot in the U-shaped members.

2. In a rack construction, a pair of elongate frame members, a strap fixed to one frame member and having an abutment portion extending beyond one end of said one frame member, connection means extending from said strap laterally beyond said one frame member across the other frame member, and pivot means extending through said connection means and said other frame member to connect said frame members together for swinging movement between a longitudinal collapsed position and a substantially normal erected position with said abutment portion engaging said other frame member, said strap being wrapped about said one frame member adjacent to and extending beyond said one end thereof, the extending edges of said strap defining said abutment portion, and said connection means comprising a pair of connection portions extending laterally on opposite sides of said other frame member and longitudinally beyond said abutment portion for pivotal connection to said other frame member in said collapsed and erected positions, said connection portions being located adjacent to and spaced inward from one end of said other frame member, for swinging movement between said collapsed position substantially parallel to said other frame member on one side thereof and said erected position substantially normal to said other frame member on the other side thereof.

3. A knockdown-rack construction comprising a pair of spaced sectional standards, a pair of legs pivotally connected to the lower regions of each standard for swinging movement between a collapsed position longitudinally of the associated standard and an erected position transversely of the associated standard, upper and lower sectional crossrails respectively extending between upper and lower regions of said pair of standards and each having its opposite ends pivotally connected to the adjacent standard for swinging movement between a collapsed position longitudinally of the associated standard and an erected position normal to the associated standard, and a sectional shelf extending between and removably connected to said pair of standards, said shelf comprising first and second wirework sections, said first section comprising a pair of generally U-shaped sides disposed in parallel planes, and cross members extending between and connected to said sides, and said second section comprising a pair of generally parallel sides, and cross members extending between and having terminal portions extending beyond the sides of said second section, said terminal portions being engaged in said U-shaped sides.

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